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EXAMINER	
SINGH, RAMNANDAN P	
ART UNIT	PAPER NUMBER
2646	

DATE MAILED: 03/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/749,867	ZHOU, YAN	
	Examiner	Art Unit	
	Ramnandan Singh	2646	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 January 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *Jan. 03, 2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This Supplemental Office Action supersedes the Office action dated March 03, 2006.

Response to Arguments

1. Applicant's arguments filed Jan. 03, 2006 have been fully considered but they are not persuasive.

Applicant's argument---" Lee does not teach or suggest an integrated circuit driver that combines a downstream voice signal and downstream data signal into a common downstream signal for the subscriber line" on page 3.

Examiner's response---Examiner respectfully disagrees. Lee teaches: "The voiceband channel circuitry may be integrated on the same integrated circuit die as the xDSL circuitry, if a single clock is used for synchronization." [col. 8, lines 47-49]. Further Lee teaches that both the hybrid network having the receive circuit and the driver reside on the same integrated circuit die [col. 10, lines 41-63]. In addition, Lee teaches a method as to how to use synchronous sample rate conversion to drive the other clock frequencies so that multiple independent clocks can be avoided [col. 8, line 59 to col. 10, line 32].

Drawings

2. With the applicant's revised submission of the drawings , the objection to the drawings is withdrawn.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-6, 11, 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee [US 6,944,213 B2].

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Regarding claim 1, Lee teaches a subscriber line interface circuit apparatus shown in Fig. 2, comprising:

a driver (380) combining a downstream voice signal in a voiceband range and a downstream data signal in a non-voiceband range into a common downstream signal for a subscriber line (290) ; and receiver circuitry (240) coupled to provide an upstream

data signal and an upstream voice signal from an upstream signal carried by the subscriber line, wherein the driver and receiver circuitry reside on a same integrated circuit die [Figs. 1-4; col. 5, line 46 to col. 6, line 3; col. 8, lines 44-58; col. 10, lines 41-53; col. 10, line 64 to col. 7, line 9; Abstract]. In this context, Lee further teaches that the voiceband channel circuitry may be integrated on the same integrated circuit die as the xDSL circuitry, if a single clock is used for synchronization [col. 8, lines 47-49]. Lee also teaches that both the hybrid network having the receive circuit and the driver reside on the same integrated circuit die [col. 10, lines 41-63]. In addition, Lee teaches a method as to how to use synchronous sample rate conversion to drive the other clock frequencies so that multiple independent clocks can be avoided [col. 8, line 59 to col. 10, line 32].

Regarding claims 2-3 and 5-6, Lee further teaches the apparatus comprising:

an upstream low pass filter providing a low pass filtered upstream signal as an upstream voice signal, wherein the upstream low pass filter resides on the integrated circuit die [Fig. 4];

a downstream low pass filter providing a low pass filtered downstream voice signal to the driver, wherein the downstream low pass filter resides on the integrated circuit die

an upstream high pass filter providing a high pass filtered upstream signal as an upstream data signal, wherein the upstream high pass filter resides on the common integrated circuit die Fig. 4]; and

a downstream high pass filter providing a high pass filtered downstream data signal to the driver, wherein the downstream high pass filter resides on the integrated circuit die [col. 5, line 59 to col.6, line 35].

Regarding claim 4, Lee further teaches the apparatus, wherein the voiceband range is from approximately 300 Hz to 4 kHz [Fig. 1]. However, it is well-known in the art.

Regarding claim 11, Lee further teaches the apparatus, wherein the non-voiceband range is greater than 25 kHz [Fig. 1]. However, it is well-known in the art.

Regarding claim 12, Lee further teaches the apparatus, wherein the downstream data signal is a discrete multi-tone encoded signal [col. 3, lines 51-57].

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 1, 4, and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hjartarson et al [US 6,295,343 B1] in view of Caine et al [US 6,735,302 B1].

Regarding claim 1, Hjartarson et al teach an integrated subscriber line interface Circuit (SLIC) apparatus shown in Fig. 4, comprising:

a driver (416) combining a downstream voice signal in a voiceband range and a downstream data signal in a non-voiceband range into a common downstream signal for a subscriber line (404) [Figs. 5-6; col. 5, line 45 to col. 6, line 16]; and

receiver circuitry comprised of a feed resistor (418) coupled to provide an upstream data signal and an upstream voice signal from an upstream signal carried by the subscriber line [Figs. 6-9; col. 6, lines 17-24].

Although Hjartarson et al teach an integrated the driver and receiver circuitry using integrated line card 400 [Fig. 4; col.5, lines 31-44; col. 7, lines 36-55], they do not teach expressly the SLIC on an integrated circuit die.

Caine et al teach a SLIC on an integrated circuit die [col. 3, lines 10-33; col. 11, line 5-19].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Caine et al with Hjartarson et al in order to reduce the size of the SLIC and thereby realize a lower cost part [Caine et al; col. 11, lines 12-19].

Regarding claim 4, Hjartarson et al further teach the apparatus, wherein the voiceband range is from approximately 300 Hz to 4 kHz [Fig. 1a]. However, it is well-known in the art.

Regarding claim 10, Hjartarson et al further teach the apparatus, wherein the voice and data signals are weight coupled to the driver using an impedance generator (424) in combination with LPF (422), wherein the weights permit varying the ratio of the downstream voice signal to the downstream data signal [Fig. 6].

Regarding claim 11, Hjartarson et al further teach the apparatus, wherein the non-voiceband range is greater than 25 kHz [Fig. 1a]. However, it is well-known in the art.

Regarding claim 12, Hjartarson et al further teach the apparatus, wherein the downstream data signal is a discrete multi-tone encoded signal [col. 1, lines 38-56

7. Claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hjartarson et al [US 6,295,343 B1] in view of Caine et al [US 6,735,302 B1] and further in view of Zhou et al [US 5,452,345].

Regarding claim 13, Hjartarson et al teach an integrated subscriber line interface circuit apparatus shown in Fig. 4, comprising:

a driver (416) combining a downstream voice signal in a voiceband range and a downstream data signal in a non-voiceband range into a common downstream signal for a subscriber line (404) [Figs. 5-6; col. 5, line 45 to col. 6, line 16]; and

receiver circuitry comprised of a feed resistor (418) coupled to provide an upstream data signal and an upstream voice signal from an upstream signal carried by the subscriber line [Figs. 6-9; col. 6, lines 17-24].

Although Hjartarson et al teach an integrated the driver and receiver circuitry using integrated line card 400 [Fig. 4; col.5, lines 31-44; col. 7, lines 36-55], they do not teach expressly the SLIC on an integrated circuit die.

Caine et al teach a SLIC on an integrated circuit die [col. 3, lines 10-33; col. 11, line 5-19].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Caine et al with Hjartarson et al in order to reduce the size of the SLIC and thereby realize a lower cost part [Caine et al; col. 11, lines 12-19].

Further, the combination of Hjartarson et al and Caine et al does not teach explicitly providing a metering signal to the SLIC device.

Zhou et al teach using a metering signal generator to provide a metering signal to the downstream path and upstream path [col. 2, lines 45-68]. It may , however, be noted that this is a teaching to one of ordinary skill in the art to apply the same to other applications.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Zhou et al with Hjartarson et al and Caine et al in order to provide a metering signal to continuously notify a customer of telephone charges, etc. [Zhou et al; col. 1, lines 12-16].

Regarding claim 14, Hjartarson et al further teach the apparatus, wherein the voiceband range is from approximately 300 Hz to 4 kHz [Fig. 1a]. However, it is well-known in the art.

Regarding claim 15, Hjartarson et al further teach the apparatus, wherein the non-voiceband range is greater than 25 kHz [Fig. 1a]. However, it is well-known in the art.

Regarding claim 16, Hjartarson et al further teach the apparatus, wherein the downstream data signal is a discrete multi-tone encoded signal [col. 1, lines 38-56].

8. Claims 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bell [US 5,930,340] in view of Zhou et al [US 5,452,345], and further in view of Willcox et al [US 5,329,588].

Regarding claim 13, Bell teaches combining voice and data signals on a common carrier shown in Figs. 1 thru 3, comprising:

a driver (i.e. splitter 301) combining a downstream voice signal in a voiceband range and a downstream data signal in a non-voiceband range into a common downstream signal for a subscriber line [Figs. 1, 3;col. 4, lines 30-65; col. 6, line 44 to col. 7, line 18]; and

receiver circuitry (i.e. reverse splitter 301) coupled to provide an upstream data signal and an upstream voice signal from an upstream signal carried by the subscriber line [Fig. 3; col. 6, line 44 to col. 7, line 18].

Bell does not teach explicitly providing a metering signal to the SLIC device.

Zhou et al teach using a metering signal generator to provide a metering signal to the downstream path and upstream path [col. 2, lines 45-68]. It may , however, be noted that this is a teaching to one of ordinary skill in the art to apply the same to other applications.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Zhou et al with Bell in order to provide a metering signal to continuously notify a customer of telephone charges, etc. [Zhou et al; col. 1, lines 12-16].

Further, Bell et does not teach expressly embodying the circuitry on an integrated circuit die.

Willcox et al teach a subscribe line interface circuit (SLIC) embodied in the form of a monolithic Integrated circuit or chip [Fig. 1; coll. 1, lines 13-20].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Willcox et al with Bell in order to protect the integrated splitter circuit using a die cap.

Regarding claim 14, Bell further teaches the apparatus, wherein the voicebands are below 4 kHz [col. 1, lines 51-53]. However, it is well-known in the art.

Regarding claim 15, Bell further teaches the apparatus, wherein the non-voiceband range is typically from 50kHz to 1 MHz [col. 1, lines 53-54]. However, it is well-known in the art.

Regarding claim 16, Bell further teaches the apparatus, wherein the downstream data signal is a discrete multi-tone encoded signal [col. 2, lines 23-31].

Regarding claims 17 and 18, Bell teaches a bi-directional splitter (301) for both upstream and downstream signals. As a result the same low pass and high pass filters apply to both directions [Fig. 3].

9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Hjartarson et al and Caine et al as applied to claim 1 above, and further in view of Zhou et al [US 5,452,345].

Regarding claim 7, Hjartarson et al do not teach explicitly providing a metering signal to the SLIC device.

Zhou et al teach using a metering signal generator to provide a metering signal to the downstream path and upstream path [col. 2, lines 45-68]. It may , however, be noted that this is a teaching to one of ordinary skill in the art to apply the same to other applications.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Zhou et al with Hjartarson et al and Caine et

al in order to provide a metering signal to continuously notify a customer of telephone charges, etc. [Zhou et al; col. 1, lines 12-16].

10. Claims 8-9 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Hjartarson et al, Caine et al and Zhou et al as applied to claims 7 and 13 respectively above, and further in view of Booth et al [US 5,835,533].

Regarding claim 8, the combination of Hjartarson et al, Caine et al and Zhou et al does not teach explicitly a metering signal cancellation circuit.

Booth et al teach a metering signal cancellation circuit (i.e. adaptive filter) shown in Fig. 7, wherein the metering signal cancellation circuit substantially cancels any metering signal present in the upstream voice signal [Fig. 7; col. 1, lines 11-49; col. 7, lines 21-55].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine Booth et al with the combination of Zhou et al, Caine et al and Hjartarson et al in order to accommodate signals in the upstream direction so that the network can then serve for communication metering signals [Booth et al; col. 1, lines 29-35].

Claim 19 is essentially similar to claim 8 and is rejected for the reasons stated above.

Regarding claim 9, Booth et al teach the apparatus, wherein the metering signal cancellation circuit further comprises a finite impulse response filter responsive to the metering signal provided to the driver circuitry [Fig. 7; col. 7, lines 21-35].

Claim 20 is essentially similar to claim 9 and is rejected for the reasons stated above.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramnandan Singh whose telephone number is (571) 272-7529. The examiner can normally be reached on M-TH (8:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (571) 272-7547. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ramnandan Singh
Examiner
Art Unit 2646